

Challenges of Urban Growth, Water and Wastewater: the Southern Arizona Story

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General objectives

- **urban growth and water and wastewater supply in the arid US Southwest using as a case study Tucson Metropolitan region of approximately 1 million people. The study uses an innovative combination of urban planning, remote sensing, demographic and water and wastewater coverage data as well as the regulatory frameworks**

FOCUS

- **focus in development patterns and surface and ground water and domestic wells is presented. Relevant examples (Rita Ranch in east Tucson, Continental Ranch and Dove Mountain in Marana, Rancho Vistoso in the Tortolita Mountains, and the Lower Oro Valley) are discussed.**

Where are you on your research

- **Background (it was very hard, we had to learn a lot of things, we had to understand each other,**
- **Completing a Research Report – Common language**
- **the remote sensing for previous work**

Key research questions

- Functioning of the **land and water system**, the the nexus : what all this means
- **Try to reconcile urban growth, official land, policy vs official policy water. What can we learn form this interactions?**
- Overlaying politices we find chaos and contradictions

Stakeholders map (overlaps redundancies)

- Interest in our research (**academic** help understand theory of urb development new chapter) ; **practicioners in government** (utilities, zoning, permits, regulators); **private** development industry (real estate, finance, construction, home builders, lawyers).
- The whole community has an nterest in one part ; government (regulators, private ; all the affected people residents, NGOs, etc thre is a land-water lawyer for each person in AZ.

METHODOLOGICAL APPROACH

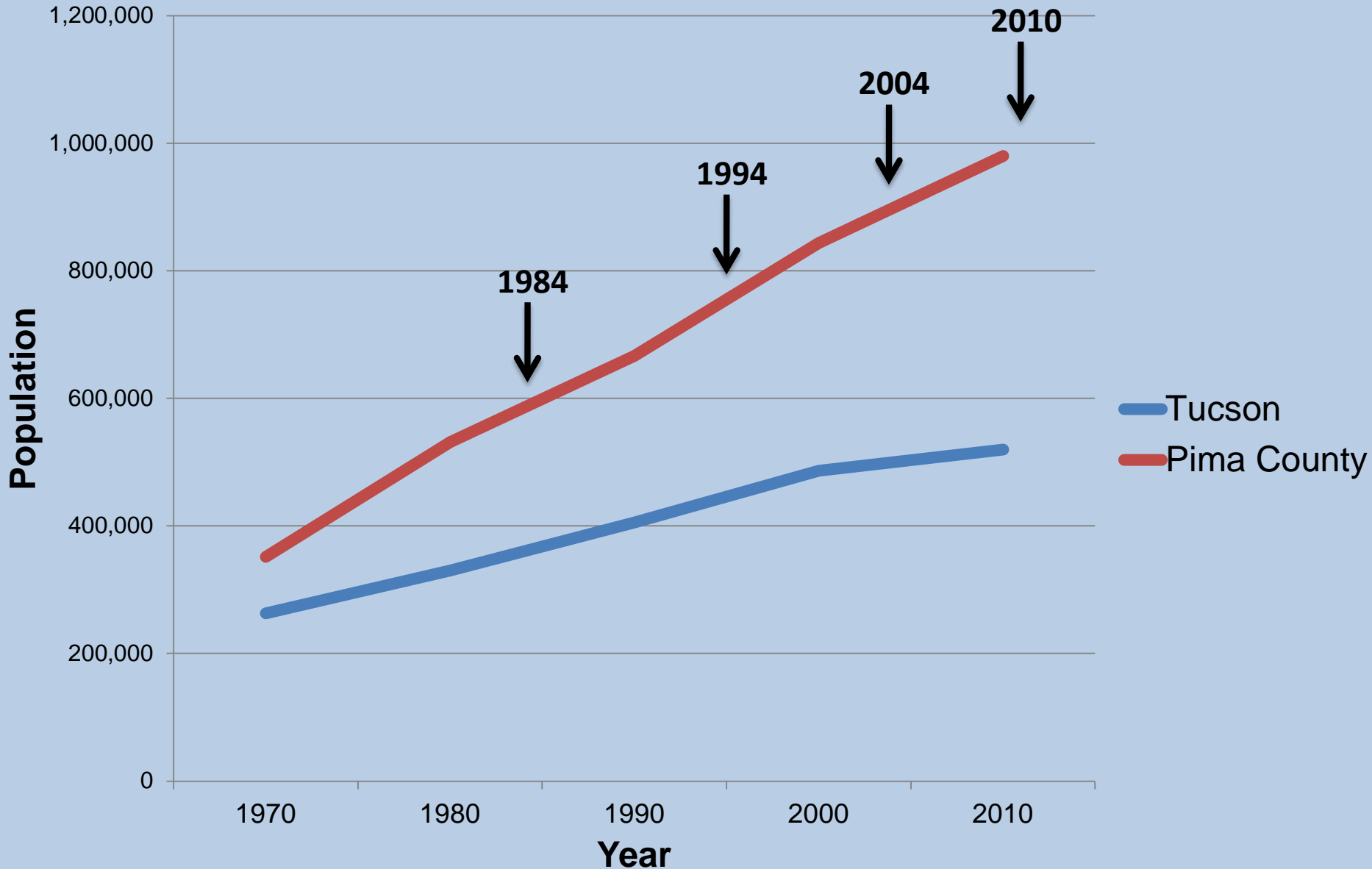
- NETWORK URBANISM
- Three layers approach
- IWRM

The Tucson Region

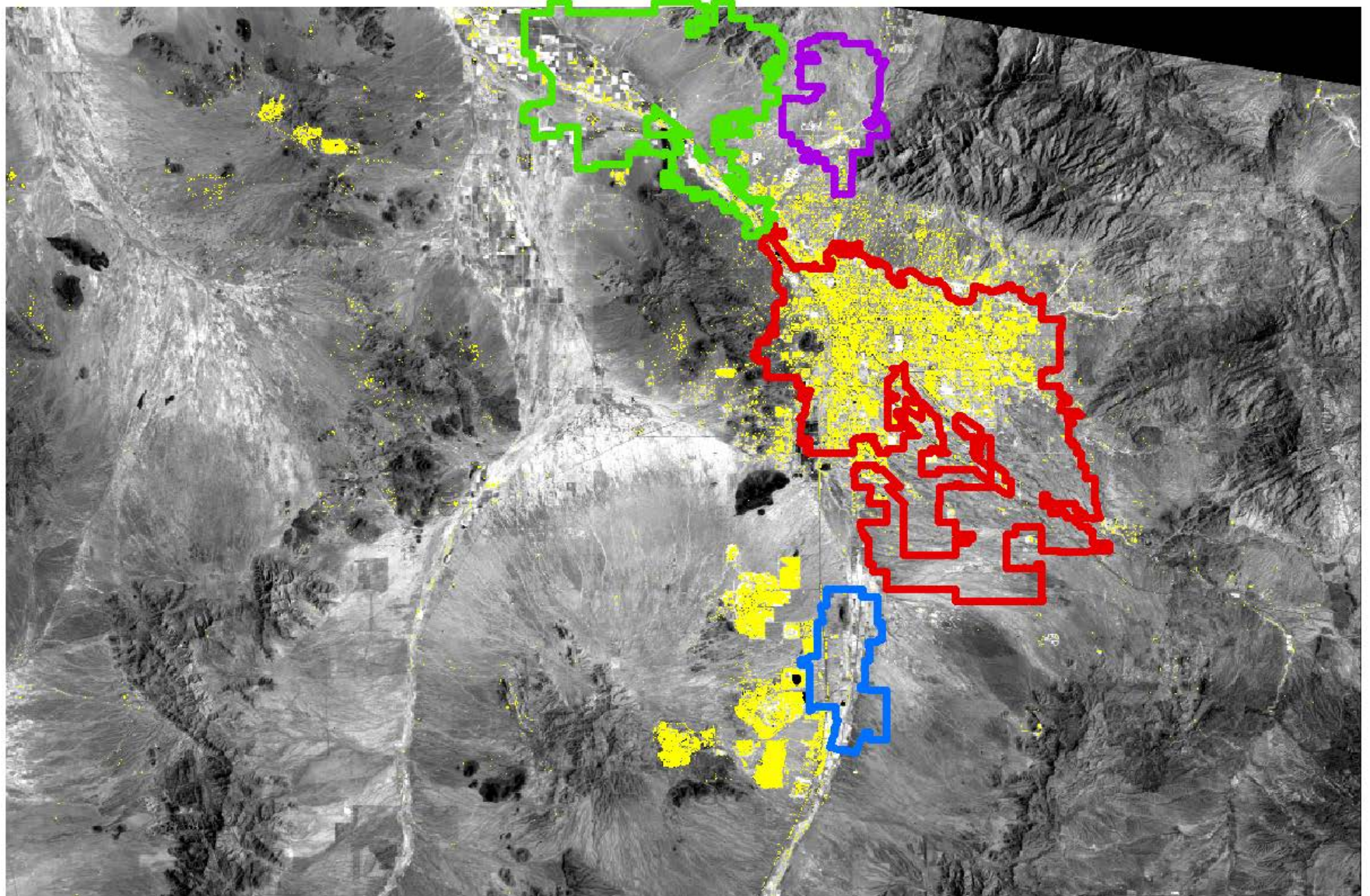
- Population:
980,263 in Pima County
520,116 in City of Tucson
- 23,828 km² = 5,888,000 ac
- Annual rainfall: 30.5 cm = 12.0 in
(metro area)



Population Growth 1970-2010 and Image Acquisition Dates



1984 Land Cover/ Land Use



Built/Urban



Tucson



Oro Valley



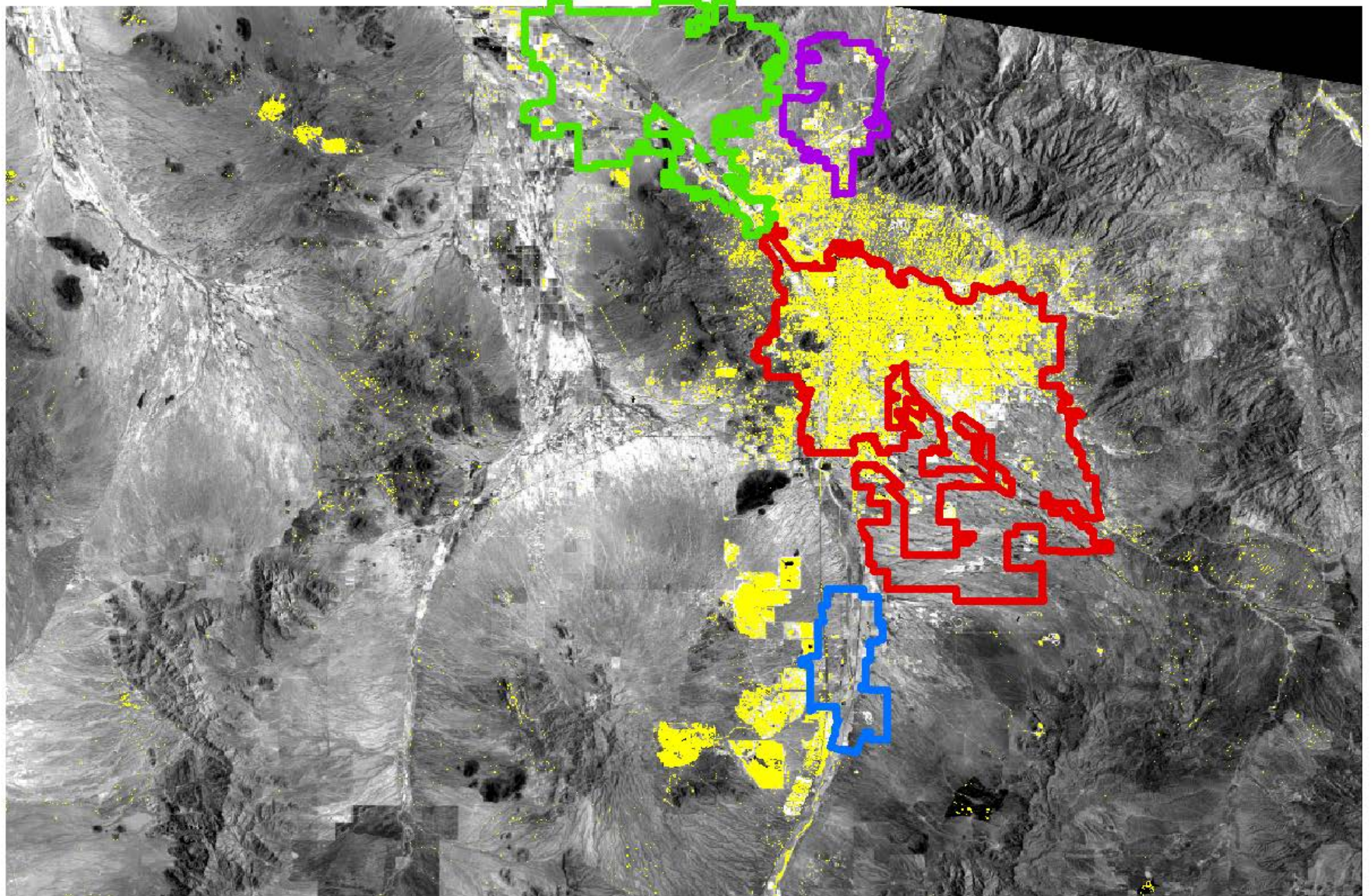
Marana



Sahuarita



1994 Land Cover/ Land Use



Built/Urban



Tucson



Oro Valley



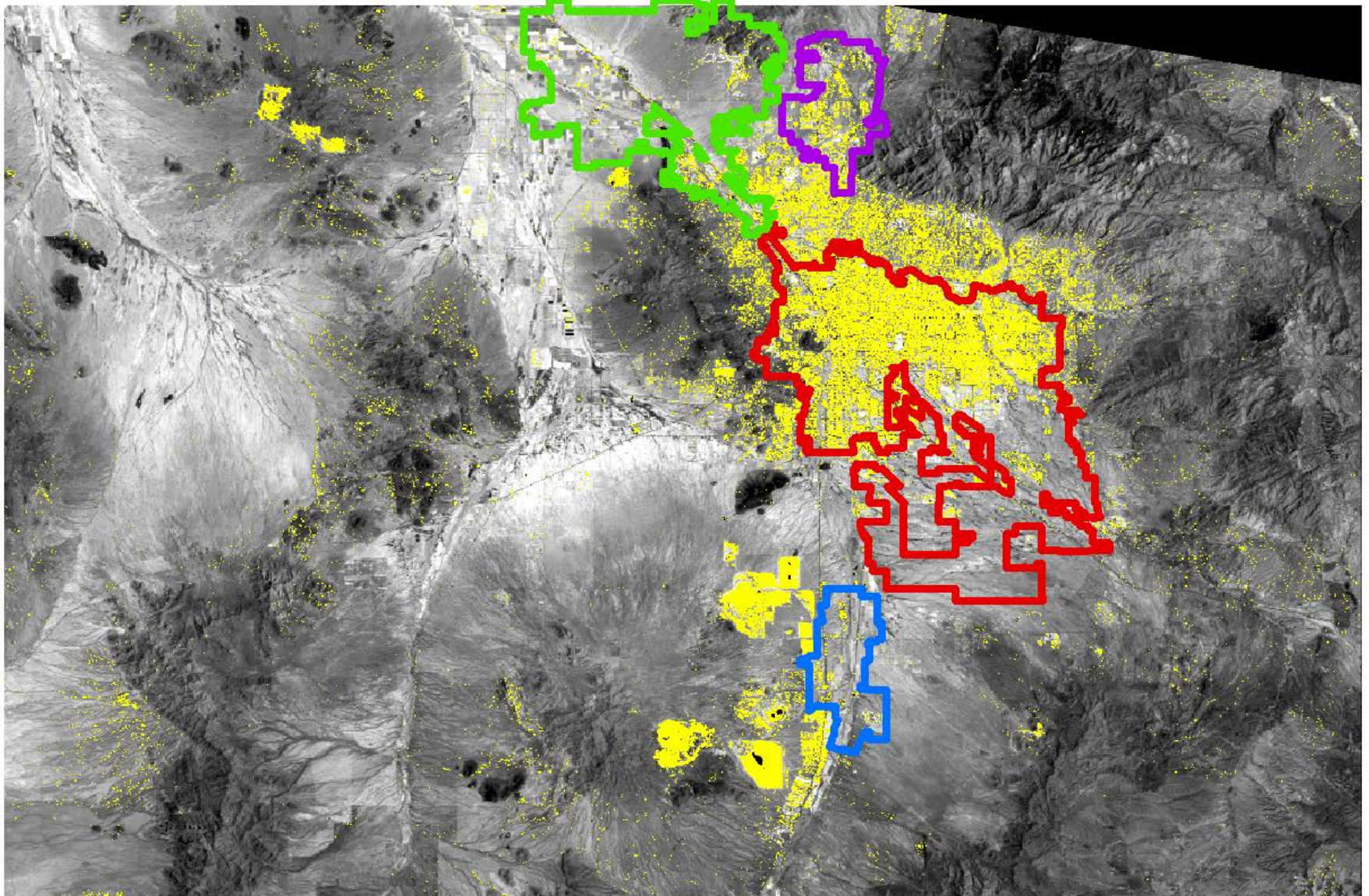
Marana



Sahuarita



2004 Land Cover/ Land Use



Built/Urban



Tucson



Oro Valley



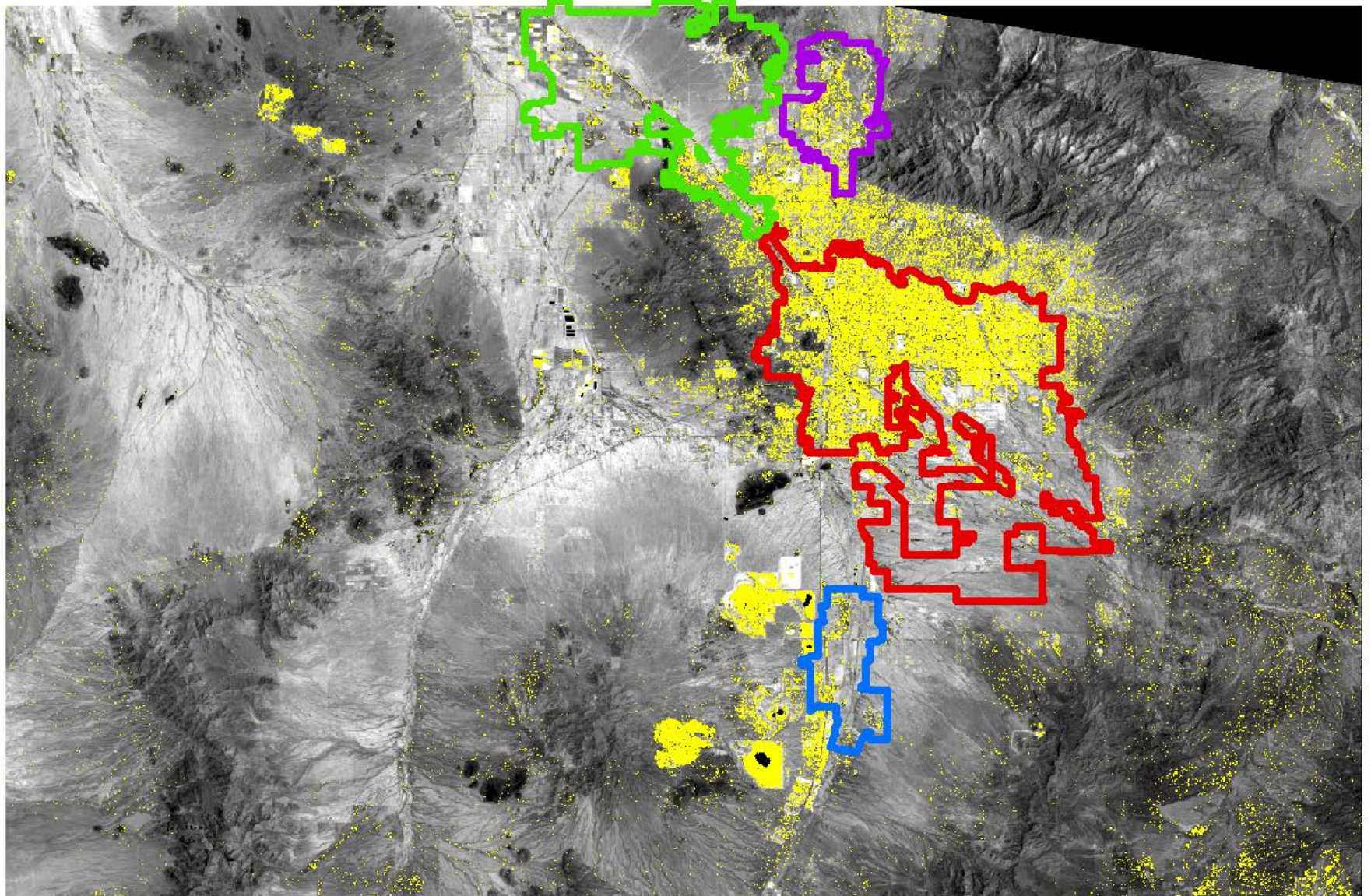
Marana



Sahuarita



2010 Land Cover/ Land Use



Built/Urban



Tucson

Oro Valley

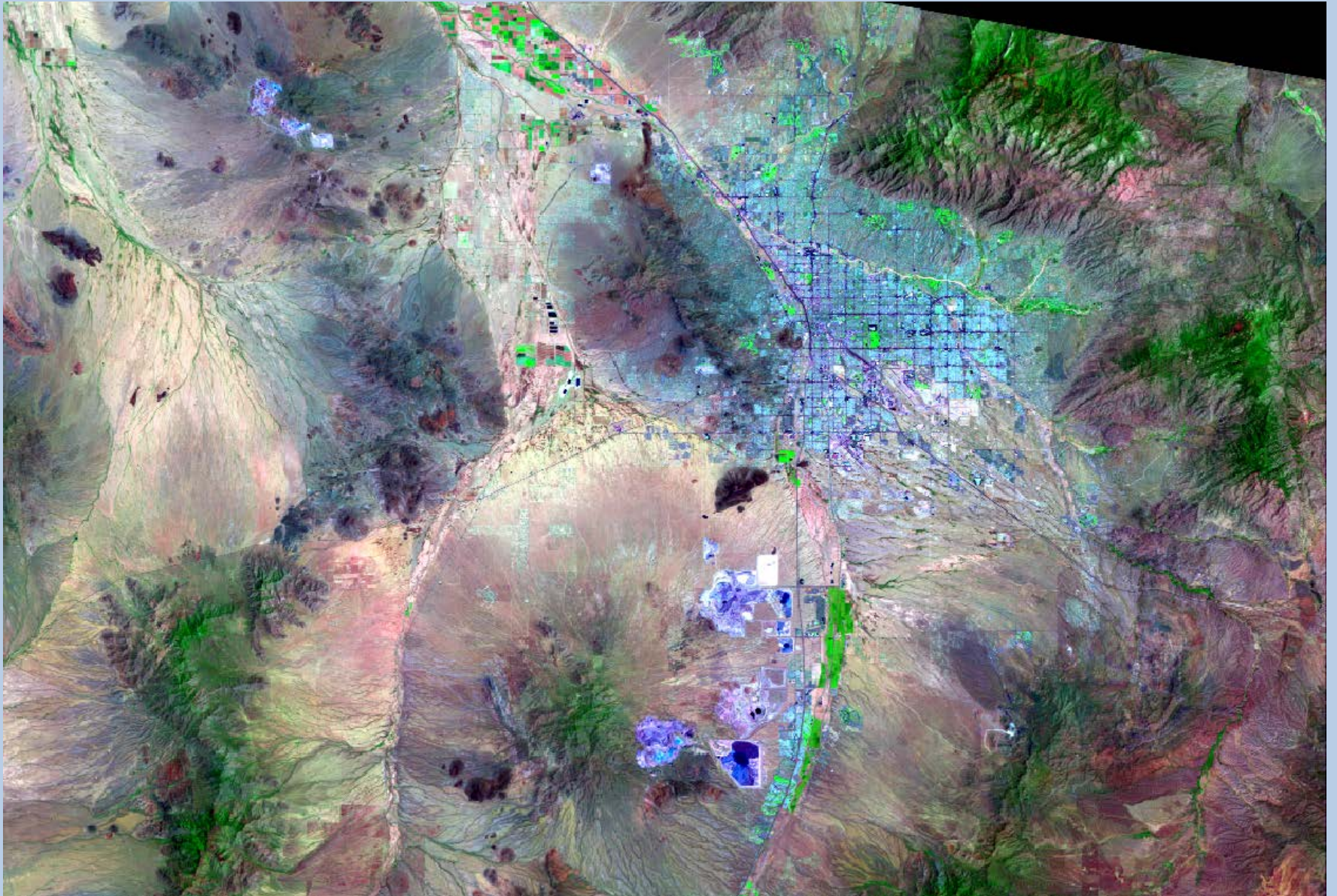


Marana

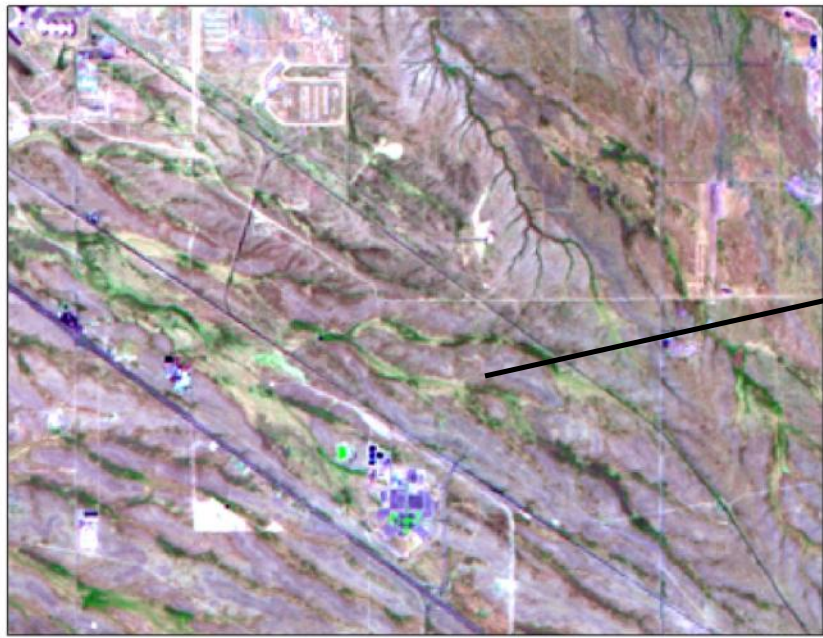
Sahuarita



Tucson: 2010 Landsat TM Color Image



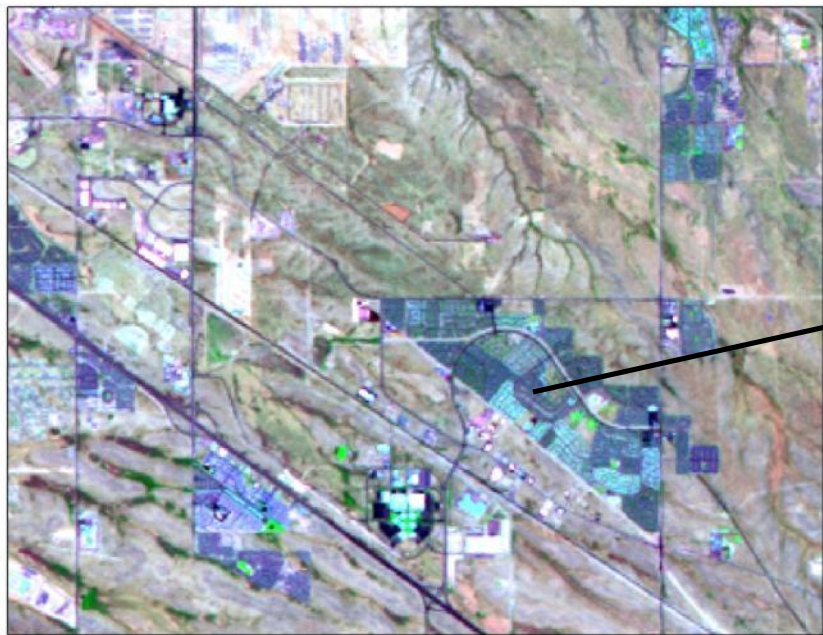
1984



Desert Environment



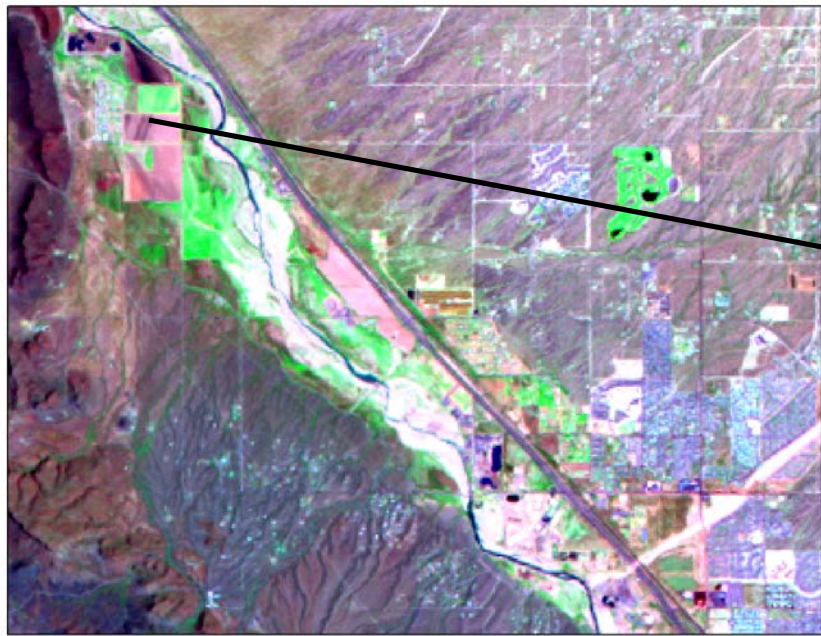
2010



Suburban Development



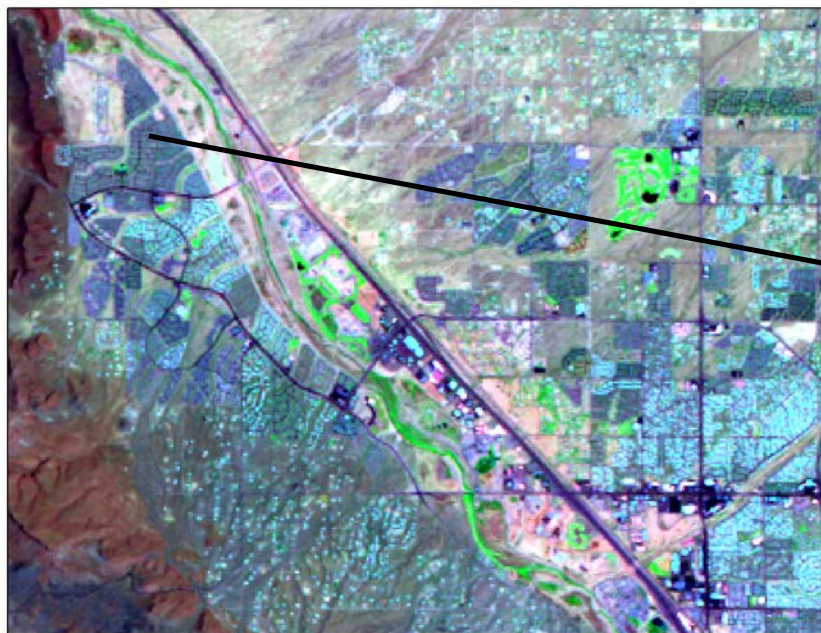
1984



Agricultural Fields



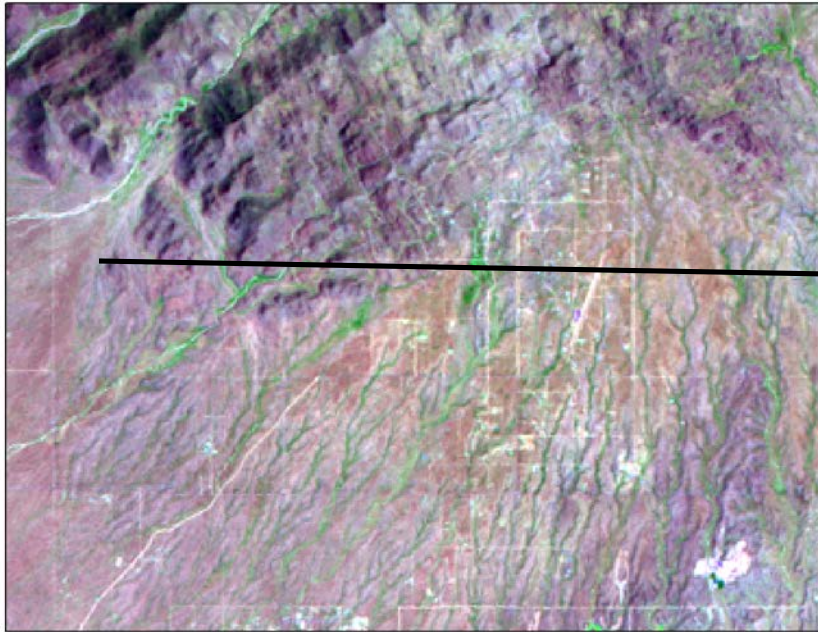
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Suburban Development



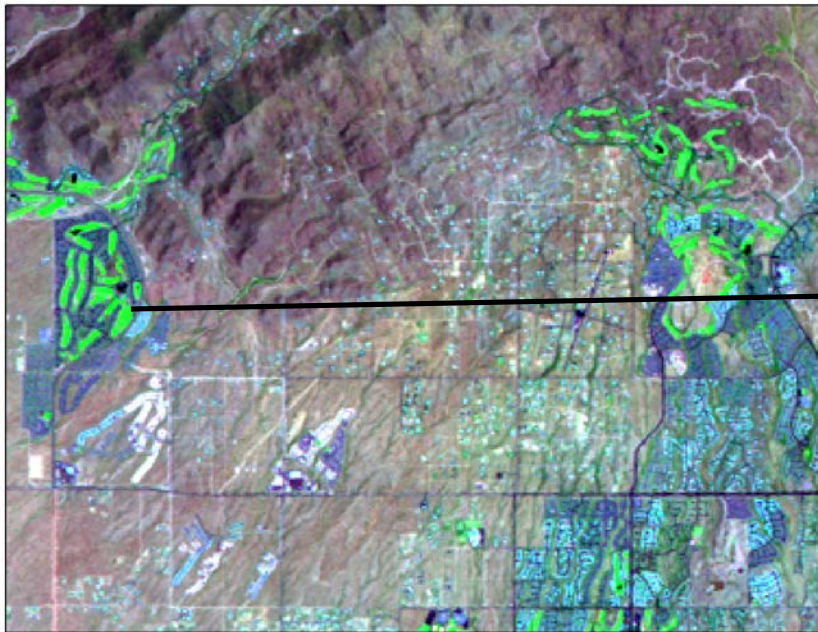
1984



Desert Landscape



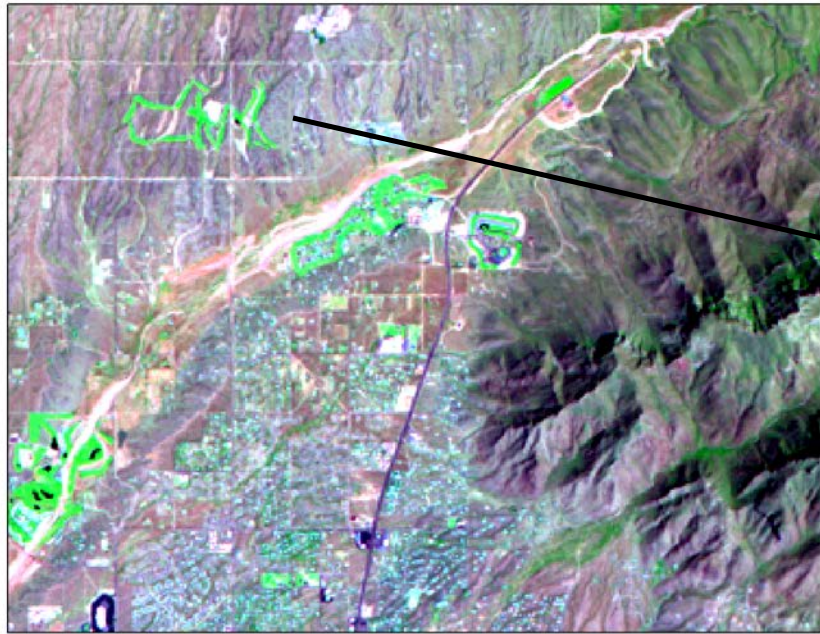
2010



Golf Course and Homes



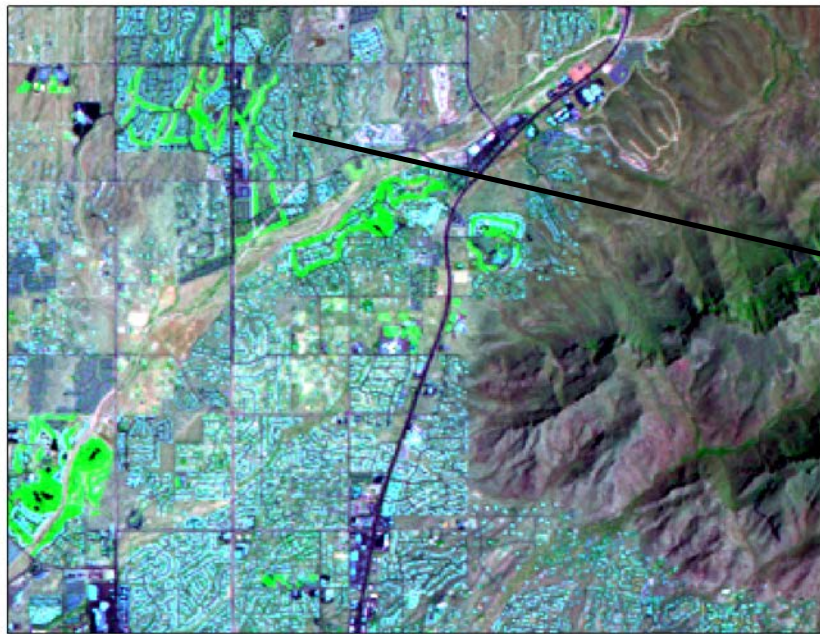
1984



Desert Landscape



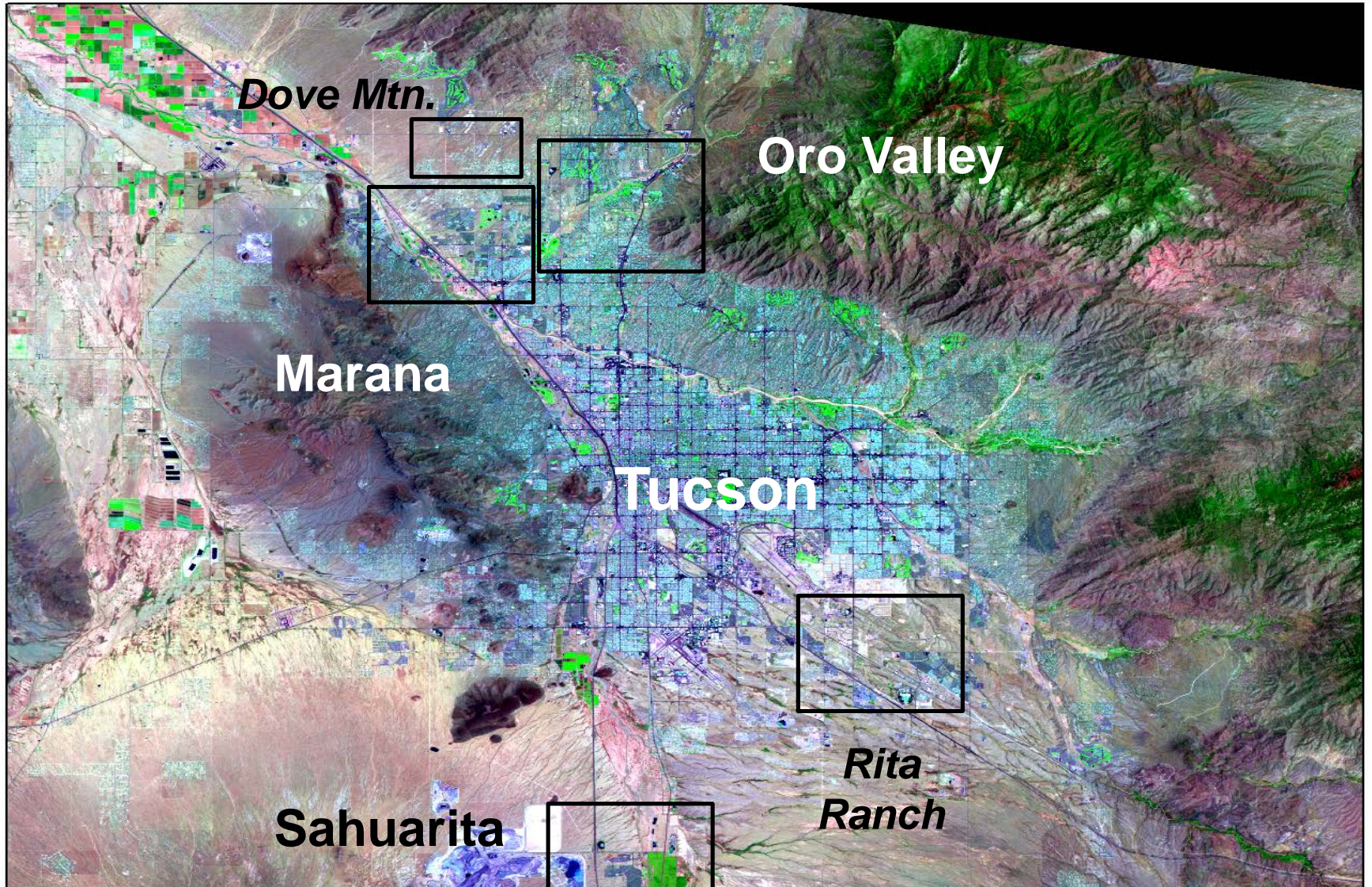
2010



Low & High Density Homes



Project Study Areas



**Thanks for your
attention !**